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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,128	11/14/2003	Ian Faye	2786	9600

7590 07/18/2006

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EXAMINER	
COOLMAN, VAUGHN	
ART UNIT	PAPER NUMBER
3618	

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/713,128	FAYE ET AL.	
	Examiner	Art Unit	
	Vaughn T. Coolman	3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The examiner of record is now Vaughn Travis Coolman. Contact information can be found in the conclusion section of the office action.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the vehicle of claims 12-14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: WV3.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 7, 9, 10, and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Botti et al (U.S. Patent No. 6,609,582 B1).

[claims 1, 7, 10, and 12] Botti discloses (see FIGS 1 and 3) a fuel cell system including:

- a combustion device (30) in the form of an internal combustion engine (300) having at least one exhaust gas line (50, 80, 119) for discharge of exhaust gas (Column 6, lines 37-67),
- a reformer (10) for converting a hydrocarbon-containing mixture (11; Column 9, lines 36-49) to a hydrogen-enriched fluid (50),
- a fuel cell unit (40), and
- at least one heat exchanger (57) arranged in the at least one exhaust gas line, said at least one heat exchanger comprising means for delivery of heat from said exhaust gas (34) to a heated fluid (120) and/or an operating substance (63) of the reformer (10).

Botti also discloses at least one exhaust gas catalytic converter (90) for purifying said exhaust gas.

Botti also discloses at least one heat reservoir (Column 10, lines 15-19) for storing heat, wherein the heat reservoir is a latent heat reservoir. Examiner notes that "latent heat" is the amount of heat that is required or released during a phase change of a solid, liquid, or gas without a change in temperature. Therefore, a reasonably broad interpretation of the term "latent heat reservoir", absent a definition supplied by the applicant, is any heat reservoir that can provide or contain "latent heat", or in other words, any heat reservoir.

Botti further discloses the above-described system for use in a vehicle.

[claim 2] Botti further discloses said combustion device (30) has an outlet opening (opening for 80) for said exhaust gas (80) and said at least one heat exchanger (57) is arranged in the vicinity of the outlet opening for said exhaust gas. Examiner is interpreting "vicinity" reasonably broad as defined by Merriam-Webster's 10th Edition Dictionary as "the quality or state of being near". As Botti's system is intended for an automotive vehicle, all components would be "near" each other.

[claim 3] Botti further discloses (see FIG 1) said operating substance of said reformer (10) to be heated comprises said hydrocarbon-containing mixture (11).

[claim 4] Botti further discloses said operating substance of said reformer (10) to be heated comprises air (63 or 59).

[claim 9] Botti further discloses at least one storage unit (42) for storing said hydrogen-enriched fluid (50).

[claim 13] Botti further discloses the vehicle as an automotive vehicle, which is inherently a self-propelled vehicle.

[claim 14] Botti further discloses the combustion device (300) having a plurality of cylinders (310, 314, 316) and said fuel cell (40) produces electrical power (100) from air (59) and said hydrogen-enriched fluid (55).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Botti in view of Duebel et al (U.S. Patent No. 7,045,232 B1).

[claim 5] Botti discloses all of the elements of the claimed invention as described above except for the operating substance of the reformer to be heated comprising water.

Duebel teaches the use of an operating substance for a reformer (26) in a fuel cell system that comprises water (30). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention shown by Botti with the reformer operating substance composition as taught by Duebel, since such a modification would provide

the advantage of, according to Duebel, supplying more hydrogen in a well known manner to the mixer of the reformer.

[claim 6] Duebel further teaches at least one metering element (shown in FIG 1) for metering or regulating a flow of said operating substance (28, 30).

Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Botti in view of Benson et al (U.S. Patent No. 5,477,676).

[claim 8] Botti discloses all of the elements of the claimed invention as described above except for the exhaust gas catalytic converter being arranged downstream of that least one heat exchanger.

Benson teaches an exhaust gas catalytic converter (24) being arranged downstream of one (174) of at least one heat exchangers (174, 184, 160) in a flow direction of said exhaust gas. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention shown by Botti, with the heat exchanger configuration as taught by Benson, since such a modification would provide the advantage of, according to Benson, carrying heat from the exhaust gas to other components for use, storage, or dissipation (Column 12, lines 35-37).

[claim 11] Botti discloses all of the elements of the claimed invention as described above except for the heat reservoir comprising a heat-storing material that undergoes a phase change during operation. However , Botti does state that a phase change material may be used in conjunction with his fuel cell system (Column 10, lines 15-18).

Benson teaches a heat reservoir utilized with a catalytic converter system including a heat storing material (166) wherein said heat-storing material undergoes a phase change during operation (Column 13, lines 23-60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention shown by Botti, with the heat reservoir including a phase change material for storing heat as taught by Benson, since such a modification would provide the advantage of, according to Benson, increasing the efficiency and effectiveness of the catalytic converter.

Response to Arguments

Applicant's arguments filed 05/02/20065 have been fully considered but they are not persuasive.

Botti does, in fact, disclose an internal combustion engine as the combustion device as described above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Akikussa et al (U.S. Patent Application Publication No. US 2004/0053087 A1) teaches a fuel cell system including an ICE, a reformer utilizing hydrocarbon mixtures and water, and an exhaust gas of the ICE being supplied to the fuel cell and/or reformer.

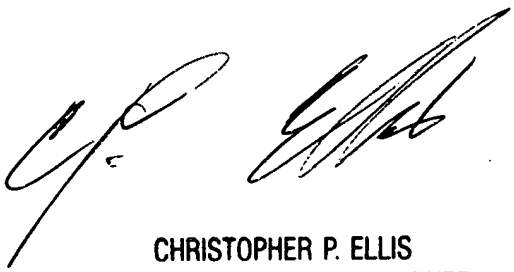
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vaughn T. Coolman whose telephone number is (571) 272-6014. The examiner can normally be reached on Monday thru Friday, 8am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Ellis can be reached on (571) 272-6914. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Travis Coolman
Examiner
Art Unit 3618

vtc



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